

Amendments to the Claims

1. (Currently Amended) A valve plate structure comprising:

open/shut means for inhaling and discharging fluid through piston movement, said open/shut means including a suction plate and a discharge plate; and

a valve plate including a suction port coupled with the open/shut means for inhaling fluid through piston movement, a discharge port for discharging fluid through piston movement and a groove section having a plurality of continuous grooves provided to each surround at least a majority of the outside of the suction port or the discharge port, said plurality of continuous grooves being located beyond a perimeter of said suction plate or said discharge plate.

2. (Currently Presented) The valve plate structure according to claim 1, wherein the open/shut means includes:

a suction valve having [[a]] said suction plate at a position corresponding to the suction port of the valve plate to intake fluid through piston movement;

a discharge valve having [[a]] said discharge plate at a position corresponding to the discharge port of the valve plate to discharge fluid; and

a head cover having a suction tube formed at a position corresponding to the suction port of the valve plate and a discharging tube formed at a position corresponding to the discharge port of the valve plate.

3. (Original) The valve plate structure according to claim 1, wherein the fluid is a coolant.

4. (Currently Amended) The valve plate structure according to claim 1, wherein each ~~one~~ of the plurality of ~~continuous~~ grooves has a width different from one another.

5. (Previously Presented) The valve plate structure according to claim 1, wherein the grooves are circles or polygons.

6. (Currently Amended) The valve plate structure according to claim 1, wherein the width of the ~~continuous~~ grooves increases extending away from the center of the suction port or the discharge port of the valve plate.

7. (Previously Presented) The valve plate structure according to claim 1, wherein the grooves are fixed in depth.

8. (Currently Amended) The valve plate structure according to claim 1, wherein each ~~one~~ of the ~~continuous~~ grooves has a different shape from one another.

9. (Currently Amended) The valve plate structure according to claim 1, wherein the continuous grooves have a shape of an inverse triangle to rapidly are U-shaped to slowly decrease in width extending downward in a depth direction.

10. (Currently Amended) The valve plate structure according to claim 1, wherein the continuous grooves are U-shaped to slowly gradually decrease in width extending downward in a depth direction.

11. (Previously Presented) The valve plate structure according to claim 1, wherein opening or closing functions of the open/shut means are operated via a pressure difference.

12. (Currently Amended) A valve plate structure comprising:
open/shut means for inhaling or discharging fluid through piston movement, said open/shut means including a suction plate and a discharge plate; and

a valve plate including a suction port coupled to the open/shut means for inhaling fluid through piston movement, a discharge port for discharging fluid through piston movement and a groove spirally provided to surround the outside of the suction port or the discharge port, the groove being located beyond a perimeter of said suction plate or said discharge plate.

13. (Currently Amended) The valve plate structure according to claim 12, wherein the groove contacts with the suction port or the discharge port at one end thereof and has a spiral shape that increases in width extending outward.

14. (Currently Amended) A valve plate structure comprising:

a suction valve to intake a low pressure coolant through a linear reciprocating movement of a piston, and including a suction plate and a discharge plate opening and shutting in response to the reciprocating movement;

a valve plate coupled with the suction valve, and including a suction port for inhaling the low pressure coolant through the piston movement, a discharge port for discharging a high pressure coolant through piston movement, and a groove section having a plurality of continuous grooves provided to each surround at least a majority of the outside of the suction port or the discharge port, said plurality of continuous grooves being located beyond a perimeter of said suction plate or said discharge plate;

a discharging valve coupled with the valve plate for discharging the high pressure coolant through the reciprocating movement of the piston, and opening and the shutting in response to the reciprocating movement; and

a head cover coupled with the discharging valve, and including a suction tube formed at a position corresponding to the suction port of the valve plate and a discharging tube formed at a position corresponding to the discharge port of the valve plate.

15. (Previously Presented) The valve plate structure according to claim 14, wherein the suction valve, the valve plate, the discharging valve and the head cover are coupled via a bolt.

16. (Previously Presented) The valve plate structure according to claim 1, wherein the plurality of continuous grooves completely surround the outside of the suction port or the discharge port.

17. (Previously Presented) The valve plate structure according to claim 14, wherein the plurality of continuous grooves completely surround the outside of the suction port or the discharge port.

18. (New) The valve plate structure according to claim 1, wherein said plurality of continuous grooves are located beyond a perimeter of said suction plate to reduce vibration and noise generated from the collision of the suction plate with the valve plate.

19. (New) The valve plate structure according to claim 12, wherein said groove is located beyond a perimeter of said suction plate or said discharge plate to reduce vibration and noise generated from the collision of the suction plate with the valve plate.

20. (New) The valve plate structure according to claim 14, wherein said plurality of continuous grooves are located beyond a perimeter of said suction plate or said discharge plate to reduce vibration and noise generated from the collision of the suction plate with the valve plate.